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A Comparative View of the State
of Medicine in the Years 1773 and
1833 -

An Introductory Lecture, College
of Physicians and Surgeons N.Y.

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ART. I. *A Comparative View of the State of Medicine in the Years 1733 and 1833, an Introductory Lecture.* By JOSEPH MATHER SMITH, M.D., Prof. &c.

It is a profitable, and at the same time, an agreeable occupation to look back into the history of the past, and to remark the changes which the healing art has undergone in advancing from age to age. In such a retrospect, it is curious to observe how tardily medical improvements have taken place, and how slight is the impression they produce on the mind, until, collectively, they have acquired a magnitude that renders them strikingly conspicuous. The periods within which great revolutions have occurred in medicine, vary exceedingly in length. Whilst some of them extend over long intervals of time, others embrace, comparatively, but a few years. Among these periods there is one, which, more than any other, has been, specially, fertile of various and signal improvements. I allude to that which comprises the last one hundred years. As the advances of medicine in this space of time are worthy of being recounted on an occasion like the present, I would respectfully invite your attention to a notice of them, and especially to a review of the state of medical science at the two epochs which bound the period in question, namely, the year 1733, and the year 1833.

It would be a subject of interesting inquiry, how far the pro-

gress of medicine has been influenced by political power, popular opinions, discoveries in other departments of science, and improvements in the arts. Such an inquiry would doubtless disclose many of the causes which have promoted and impeded the progress of the healing art. Every important change, in the moral and political world, has a bearing more or less direct upon the interests of science. Circumstances apparently incidental, and, in themselves, at the time, of little moment, are sometimes ultimately productive of results far exceeding, in magnitude and importance, the boldest conceptions of the imagination. Influences which are nascent to-day, may to-morrow annihilate those that have been in powerful action, and, at the same time, give energy and direction to others which had been feeble or slumbering. It is thus that, at one time, we see political events obstructing or advancing philosophy and the arts, and, at another, philosophy and the arts controlling or turning the course of political events. The interests of learning are affected more, perhaps, than those of any other human pursuit by the ever-varying circumstances with which they are proximately or remotely connected. Hence it is that, in flowing through successive ages, the great stream of science has not equally widened and deepened in equal periods of time, but has been slow or rapid in its enlargement, according as passing events have diverted from, or directed into its channel the currents of human thought.

To illustrate the extent to which the progress of medicine has been influenced by the causes referred to, would require a wider scope of research than is afforded by the limits of an introductory lecture. But though such an inquiry forms no part of our purpose, it may not be uninteresting to take a general view of the epoch with which, in reference to medicine, we design to compare the present. History is the more attractive when it assembles contemporary individuals and synchronistic events, and faithfully exhibits their distinguishing characters and relations to one another. Leaving the present then, and returning back through the last one hundred years, let us contemplate the world as it was in 1773.

In looking around on the state of things at this period, our attention is first arrested by the principal contemporary sovereigns. On the British throne is George II. in the seventh year of his

reign. France is governed by Louis XV.; Spain by Philip V.; Germany by the Emperor Charles VI.; Poland by Augustus; Prussia by Frederick William I.; Denmark by Christian VI.; and Russia by the Empress Anne. At the head of the Roman hierarchy is Clement XII., and Mahomet V. rules the Ottoman empire. Under the sway of these leading potentates the political, social, and religious concerns of every civilized nation are so regulated and governed as to secure the permanence of regal authority.

Subject to the reigning princes, on every side, are men distinguished in all the higher pursuits of life. It is the age in which flourish, as statesmen or warriors, Sir Robert Walpole, the Duke of Villars, Admiral Vernon, the Earl of Stair, Prince Eugene, Count de Saxe Maurice, the Earl of Bathurst, and Count de Belleisle. Among the writers, chiefly miscellaneous, are Montesquieu, Lord Kames, Fontenelle, Voltaire, Richardson, the Earl of Chesterfield, Bolingbroke, Rollin, J. B. Rousseau, Swedenborg, and Cadwallader Colden. In the circle of junior writers of the same class, are Hume, Johnson, Fielding, and Franklin. Of the poets risen, or advancing to the summit of their reputation, are Pope, Blair, Swift, Allan Ramsay, Thomson, Dyer, Young, Philips, and Metastasio. In divinity and ecclesiastical literature stand pre-eminent, Butler, Sherlock, Middleton, Mosheim, Hoadly, Warburton, Stackhouse, and Massillon. Below these in age, but equally gifted, are Doddridge, Wesley, Thomas Newton, and Edwards. In mathematics are Wolff, Simpson, Halley, Maupertius, Maclaurin, Euler, and Bradley. In architecture and the imitative arts of painting and statuary are, Zablia, Rysbrach, and Hogarth, all in the maturity of manhood. In music, Handel, at the age of nearly half a century, is without a rival.

Next to these eminent individuals, we may notice the more generally interesting events of 1733. The death of Augustus of Poland occurring in this year, gives rise to a new continental war. The Emperor resolves to place the Elector of Saxony on the throne of that kingdom, and is opposed in his scheme by France, Spain, and Sardinia; these latter powers favouring the claims of Stanislaus. Prince Eugene, at an advanced age, is again called to head the imperial troops, after being in retire-

ment for fifteen years in Italy. It is in this year that the accomplished and chivalrous Oglethorpe is engaged in founding the colony of Georgia; and that Berkeley, whose visit to America a few years before, and whose liberal benefactions to our infant literary institutions render his name familiar to us all, is created Bishop of Cloyne. It is the year in which the publication of the infidel writings of Voltaire occasions a warrant to be issued for his arrest, and his letters are ordered to be burnt. It is at this time, also, that we observe the origin of Protestant missions, in the project of the United Brethren for evangelising the world, and the embarkation of the first three missionaries for a foreign land.

Such are some of the living individuals, and passing events of 1733,—individuals whose actions and works illustrate the end of the first third of the eighteenth century, and events of deep interest in reference to the future. A more detailed view of the state of things at this period, would show that the strong arm of power, however heavily it may press, here and there, upon the civil and religious rights of mankind, weighs but lightly upon the interests of literature, philosophy, and the arts. In these the votaries are numerous, and their achievements many and brilliant.

But who, it may now be inquired, are the prominent physicians of 1733, and how do they rank with their political, literary, and philosophical contemporaries? What are their doctrines, and their principles, and modes of practice?

In the multitude of medical men that here crowd upon our notice, may readily be distinguished those most entitled to regard. They are known by the number and character of their works, and the exalted stations they occupy. First, in the list of pre-eminence, and above fifty years of age, are Stahl, Hoffman, Boerhaave, Winslow, Cheyne, Mead, Petit, Morgagni, and Heister. Below the age of fifty, and above twenty-five, are Le Dran, Cheselden, Smellie, Alex. Monro, Albinus, Van Swieten, Senac, Huxham, Lieutaud, Gaubius, Sauvages, Pringle, and Linneus. To this catalogue must be added, Boylston and Nicoll in this country. In the genius and learning of these few individuals, the medical profession is represented in its most favourable character. There are others whose talents and labours give

them a limited reputation, and place them above mediocrity; but, to name them would scarcely add lustre to the catalogue given.

Of the occurrences relating to medicine at this time, a few particularly invite our attention. It is in 1733, that Heister, Professor at Helmstadt, publishes his *Anatomy*, a *Compendium*, highly valued, though inferior in merit to the system of Winslow, which appeared the year previous. At the same time, Cheselden issues his splendid work on the bones, which he dedicated to Queen Caroline, to whom he had been appointed chief surgeon. Simultaneously with these publications is the appearance of Cheyne's "English Malady, or Treatise on Nervous Diseases," a very popular work, containing an interesting account of his own case. Occurring at this period, is an incident, in which arbitrary power is seen sternly exercised in dispiriting genius, and frustrating an object of laudable ambition. Linneus, at the age of twenty-six, after exploring the botany of Lapland, and publishing an account of its plants, being in poverty, attempts to support himself by delivering private lectures at Upsal; but the statutes of the University allowing no one to lecture who is not a graduate, and Rosen, the professor of anatomy, informing against him, he is obliged to desist and seek other occupations. The annals of chemistry in this year are enriched by the discovery of the metallic nature of arsenic and cobalt. In regard to the epidemics of the period, the one to which the attention of physicians is universally called, is the influenza or epidemic catarrh. Commencing in America, the disease travels eastward, spreads over Europe, and ultimately extends to the Island of Bourbon, and probably over the whole earth.

Turning to another view of the era we are contemplating, let us glance at the medical institutions and general character of the profession.

In most of the countries of Europe are found sources of elementary instruction in the healing art. But the great fountains of medical knowledge are at Leyden, Halle, and Paris. Though infirmaries had their origin as far back as the time of Justinian, their number is yet small, and their organization and economy in many things defective. The only general hospitals

in London are those of St. Thomas, Guy, St. Bartholomew, and Westminster. St. George's was founded in the year on which our attention is fixed. In Paris are the Hôpitaux, Hôtel Dieu, La Pitié, La Charité, St. Louis, and a few others. The Royal Infirmary of Edinburgh, projected in 1721, and though not opened until several years afterwards, is rising into notice. These institutions, and others of a similar character in different parts of Europe, in fulfilling the humane purposes of their creation, afford little or no systematic instruction in clinical medicine and surgery. The importance, however, of practical illustrations at the bed-side is beginning to be felt as essential in a medical education.

In regard to the majority of those engaged in the practice of the healing art, little can be said in their favour. Excepting those who have enjoyed the advantages of a regular medical education, the greater number are distinguished by their ignorance and imposing pretensions to skill. The line of distinction between medicine and surgery is, for the most part, well defined and jealously preserved. The physicians everywhere take precedence, and, in England and Scotland, are incorporated into Royal Colleges; whilst the surgeons are incorporated with the barbers, and the apothecaries with the grocers. It is chiefly in the first of these classes are found the learning and science which give elevation to personal character, and claim for medicine the rank of a liberal profession. But, as if learning and science, in themselves, are undeserving of homage, it is curious to observe the extrinsic means resorted to by the most distinguished physicians of the age, in common with the members of the other learned professions, to secure respect and reverence. The means alluded to are a gravity of deportment, and a style of dress, calculated to impose on common minds, and inspire confidence in the mysteries of physic. This feature in the medical character of the day is not confined to the seniors of the profession, but is found in the youngest aspirants for practice. Indeed, it is said, that "the physicians in Hogarth's prints are not caricatures; the full dress, with a sword and a great tie-wig, and the hat under the arm, and the doctors in consultation, each smelling to a gold-headed cane, shaped like a parish beadle's staff, are pictures of real life in his time, and a

young physician, thus equipped, walked the streets of London, without attracting the eyes of passengers." Added to these means of impressing the public mind, is the general practice of writing and prescribing in Latin, the language, at this time, common to the professors of all the higher departments of learning.

These more conspicuous objects of remark being examined, our attention is next invited to the actual state of medical science in 1733. In entering this field of observation, it is obvious, that our notice of particulars must be very brief and general.

Anatomy being the basis of medical science, is of course the first study in every plan of medical education. Hence the importance of perfecting this department has always been acknowledged. The zeal and success with which it was cultivated in the earlier part of the eighteenth century, is creditable to the physicians of the times. We have before had occasion to mention the names of Heister, Winslow, and Cheselden. Availing themselves of the knowledge of their predecessors, and also of their great contemporary Ruysch, who died two years prior to the era we have in view, they were enabled to present to the profession systems of anatomy exceedingly correct and well arranged. Their works, however, are mostly confined to special anatomy, and consequently are defective in those minute views of the elementary textures and relations of parts from which are deduced many of the truths of physiology and pathology, and the rules of operative surgery. Among the more celebrated junior teachers of anatomy at this time, are Monro at Edinburgh, and Albinus at Leyden; the former having been appointed professor of that department at the age of twenty-three, and the latter at twenty. Of those more advanced in age, no one is more distinguished than Morgagni of Padua.

The chemistry of this period is nothing more than an assemblage of facts observed as occurring, under certain circumstances, when bodies act on one another at insensible distances. The laws that govern the changes that take place during chemical action, as well as the nature of the changes themselves, are unintelligible. It is true, in some instances, theoretical expositions are given; but they are, for the most part, fanciful. Such is the theory explanatory of the nature of fire and chemical

inflammation, first suggested by Becker, and afterwards adopted and amplified by Stahl—a theory which supposes a principle, called *phlogiston*, to be present in all inflammable bodies, and which is separated from them in the process of combustion; whence they are entirely changed in their qualities.

It is interesting to observe how many of the embarrassments in the medical researches of the time are referrible to deficiencies in chemical knowledge; and it is equally so, to remark how ingeniously a great amount of error is intermingled with truth and wrought up into plausible and even beautiful theories. The more prominent examples of this kind are the productions of STAHL, HOFFMAN, and BOERHAAVE. To these illustrious men is assigned, by common consent, the first rank of eminence. Their works are every where read; and their *dogmata*, promulgated, *ex cathedra*, carry with them an authority that commands general attention.

Our limits precluding a particular analysis of their respective hypotheses, we shall merely advert to their cardinal principles. To understand these, however, it is important to premise that from the time of Hippocrates, and especially of Galen, every medical theory had been founded on the assumption that the humors of the body were the seats of disease. But though humoral doctrines had long prevailed, physicians had been divided into different sects, of these the principal were the Methodists, the Galenists, the Chemists, the Mechanicians or Mathematicians, the Spiritualists, and the Eclectics. These sects had their origin in the different views and modes of reasoning prevalent among physicians, in respect to the condition of the solids and fluids in the normal and morbid states of the system. They had successively risen, and though some of them had lost their distinctive characters, the principles of all of them were extant in the earlier years of the eighteenth century.

STAHL, whose doctrines we shall first notice, was born in Franconia, and is now, at the period of which we speak, in the seventy-third year of his age. He was educated in the school of the chemists, and early in life was appointed, through the influence of Hoffman, to a medical professorship in the new university of Halle. To the interests of this institution he consecrated his life; and now, in his old age, enjoys, with his col-

leagues the satisfaction of seeing it contending for superiority with the most distinguished schools of the age. Applying himself to the study of chemistry and pathology, his genius was soon displayed in new and enlarged views of these departments of science. Of him as a chemist, and especially as the chief author of the theory of *phlogiston*, we have already spoken. We are now to regard him as the expounder of the nature of diseases.

From attentively examining the phenomena of the living human body, and especially observing the changes which substances undergo when received into it, he was led to reject the doctrines of the chemical and mechanical physicians, and to refer the various states of the system to the operations of an intelligent, spiritual power, superadded to the organization. He is accordingly regarded as a metaphysical pathologist. In fact he adopts substantially the leading tenet in the hypothesis of Van Helmont, the founder of the metaphysical school, who died in 1644.

To the power or agent in question, Van Helmont had given the name of *archeus*, and Stahl, believing it to be the rational soul, calls it *anima*. All the functions of the body, he contends, are under its control; and that, when their healthy condition is disturbed, it is immediately exerted in restoring them to a sound state. The body in health, he says, is inclined to plethora, and that the dangers and evils of this state are obviated by the *anima* inducing regular and sufficient excretions. When, in disease, the discharges are excessive, or otherwise, it is active in diminishing, or increasing them; and should its power be inadequate to the purpose, it is then the province of the physician to aid its operation. Interference, however, he believes is seldom necessary, and, when necessary, he asserts that mild measures only are required. He accordingly condemns, in general, all heroic remedies. His practice, in a word, is entirely based on the hypothesis, that the morbid actions of the system, being induced by the superintending intelligent power, are always salutary in their tendencies, and, consequently, should not be roughly promoted or retarded, but carefully watched and regulated.

In exhibiting the important truth that there is a principle in

the body which occasions elementary combinations and functional phenomena that mere physical agencies are incapable of producing, Stahl forcibly invalidates the doctrines of the chemists and mechanicians. In this respect his theory possesses superior merit. In another view, however, it is liable to objection. By relying too much on the curative power of the *anima*, his practice is often extremely inefficient. Moreover, by making the metaphysical characters of disease the chief objects of medical study, he inclines his followers to consider healthy and morbid anatomy, and diagnosis, as of little importance. The work in which his hypothesis is elaborately stated, is entitled "Theoria Medica Vera," and was published in 1708.

It is obvious that not until medicine shall assume the character of a demonstrative science, will physicians agree in any one system of theory and practice. The state of medicine in 1733 possesses nothing of that character, and accordingly we are not surprised to find doctrines prevailing which differ essentially in their principles. The pathology of Stahl, though supported by all his ingenuity, leaves room for the display of other theories, equally or more attractive and popular. Such is the theory of Hoffmann. This distinguished physician was born in the same year as Stahl, viz. 1660, and what is remarkable, besides being of the same age, they have, during a great part of their lives, been associate professors of the same branches, in the same university, the latter being adjunct to the former.

To a fertile genius, HOFFMANN unites great learning and untiring industry. In his medical inquiries he exhibits a mind freed from the strong prejudices of education, and bold in original research. Hitherto, as we have before stated, disease had, for the most part, been considered as depending on certain conditions of the blood. The solids had scarcely been adverted to as the primary seat of disease. Baglivi, professor of medicine and anatomy at Rome, in the course of his researches was led to the conclusion, that the primordial deviations from health take place in the moving fibres. Animated by the discovery, he abandoned the beaten tracks of the humoral theorists, and confidently asserted that disease consisted in certain alterations in the state of the solids, and that when the fluids are disordered they had become so consecutively. This novel doctrine was widely

published; but made little impression on pathology during the life of its author. Baglivi was several years younger than Hoffman, but died in 1706, at the early age of thirty-eight, leaving his name inseparably connected with a theory which is destined never to perish.

Enlightened by the original inquiries of the Roman professor, Hoffman embraced his fundamental principles, and founded upon them a system peculiarly his own. He not only contends that diseases commence in the solids, but he explains the nature of their morbid conditions. He supposes the moving fibres to possess, in health, a certain degree of tone or action, and that deviations from this state constitute disease. If, from any circumstance, the action is morbidly increased, a *spasm* of the fibres is the consequence, and, if the action be diminished, a debility is induced which may extend to the point of *atony*. Spasm and atony of the moving fibres, therefore, are, in his system, elementary or primary states of most diseases. In explaining the manner in which these states of the solids are produced, he brings into view the functions of the nervous system; and thus gives to pathology a form essentially different from all preceding hypotheses. But to these new doctrines are added, in his system, much of the humoral pathology, and many speculations purely chemical and mechanical.

Leaving the great school at Halle, and its celebrated professors, we come next to the University of Leyden, at the head of which, in the faculty of medicine, is BOERHAAVE. This illustrious physician is now, at the period under notice, in the sixty-fifth year of his age, and has successively filled the chairs of several branches of medicine. He is distinguished as a chemist, botanist, physiologist, and pathologist.

As a pathologist, Boerhaave is an eclectic. In forming his system, he selects what he considers the most valuable from all the preceding systems, instead of adopting any one of them. Some of the materials which enter into his system, he derives from the the doctrines of the Galenists, some from the hypothesis of the mechanicians, and some from that of the chemists. In the introduction to his Institutes he says, "at present physic may be learned without adhering to any particular sect, by rejecting every thing that is offered without demonstration, and by col-

leeting and retaining what has been offered and approved to be real truth, both by the ancients and moderns."

To convey a general idea of the pathological opinions of Boerhaave, it is necessary first to observe, that he supposes that the solids are composed of elementary or earthy particles which are united together by a glutinous matter, and which, when thus united, form minute or simple fibres. Now, these simple fibres, he imagines, possess certain mechanical properties which are affected in disease. Thus, in some disorders they are too lax, and in others too rigid. This difference forms the basis of a division of their diseases into two great classes, viz. 1st. Those of a weak and lax fibre; and, 2dly, those of a stiff and elastic fibre. Having laid down these principles, he proceeds to treat of the disorders of the vessels and viscera; and as these are composed of simple fibres, he, without particularly considering their functions, divides their diseases into those of laxity and rigidity. This doctrine is specious and intelligible. Van Swieten, the pupil of Boerhaave, observes in relation to it, that "the diseases of the fibres being considered, and consequently of the solid parts of the body, so far as they consist of fibres, it appears to how great a simplicity the diseases which occur in all the solid parts of the body may be reduced." After giving his pathology of the solids, Boerhaave enters upon that of the fluids. He first treats of those morbid alterations of the humours which take place in them spontaneously. These he divides into three kinds, 1st, those of an acid; 2dly, those of a glutinous; and, 3dly, those of an alkaline quality. The principal sources to which he traces these spontaneous changes, are the varieties of food, and certain circumstances of the body into which they are received. Having treated of the diseases of the solids and fluids severally, he next considers the phenomena which result from the union of the pathological conditions before described. The force of the circulation is here brought under examination, and this leads to a division of diseases into 1st, those that arise from an excess of the circulatory motion; and, 2dly, those from its defect. His reasoning upon these opposite forms of disease, is, for the most part, mechanical. Connected with his pathology of the vascular system is his doctrine of obstruction which forms an important part of his system. "An obstruction," he says, "is a

stoppage in a canal denying a passage to the liquid, whether vital, sound, or morbid, that ought to pass through it," and among the causes which produce it he enumerates constriction and compression of the vessels, a lensor, viscidity, inspissation, or coagulation of the humours, and an *error loci* of the globules of the blood. Upon these views of the vessels and circulating fluids, he founded his practice of using diluents, attenuants, and deobstruents.

These are the broad outlines of the theory of Boerhaave—a theory so felicitously constructed, so harmonious with the state of the various sciences at the time, and so captivating in its details and illustrations, as to annually draw around its author a multitude of pupils from different and distant countries. The genius, erudition, and auspicious fortunes of Boerhaave, give him a renown which few physicians can ever hope to enjoy. His pupils admire him as a teacher, and the learned deem it an honour to know him; his fame is universal, and every where his character is revered by the great and good.

In the sketch now given of the systems of the three great theorists, Stahl, Hoffmann, and Boerhaave, it will be remarked how slightly they rest upon the only true basis of medical science, experimental physiology, and pathological anatomy. Made up chiefly of assumptions and scholastic reasonings, they afford little evidence of laborious observation, and cautious induction. Still they possess some truths of great value, and which, from their fundamental character, will ever occasion frequent reference to the systems in which they first appeared. But though little attention is given by the systematics in question to the study of morbid anatomy, there are those, contemporary with them, who, laying aside theories and preconceived opinions, pursue it with spirit and success. In this number is the celebrated Morgagni. Indeed, the medical libraries of 1733, are not without works on this subject. Within a little more than half a century, anterior to this time, Bartholini, Bonetus, Valsalva, and Chirac, not to mention others, had gathered from dissections valuable materials for the construction of a just system of pathology. These instances of toil, in a pursuit of all others connected with science the least inviting to most minds, are sufficient to redeem the age from the charge of exclusive indulgence in speculations.

With regard to the modes of practice common at this epoch, there is less diversity than in the prevailing theoretical systems. In fact the therapia of the times is, with all parties, substantially the same. To this remark, however, there is, perhaps, one exception. The Stahlian physicians condemn all active remedies; whilst most other practitioners admit the advantage and frequent necessity of them. The writings of Sydenham, who died in 1689, when Stahl and his rival contemporaries were about commencing their brilliant career, containing many demonstrations of the benefits that result from studying the simple phenomena of disease, and fulfilling the indications they obviously furnish, could not otherwise than influence the practice of all who read them with a view to instruction. Boerhaave speaks of him as the English Hippocrates. Destitute, for the most part, of the subtleties of learning, but rich in facts, and perspicuous in description, the works of Sydenham are, in an eminent degree, practical, and are consulted with a confidence which those of the mere theorist fail to inspire. His treatment of disease is that naturally suggested by a sound judgement acting with competent knowledge; it is, in fact, careful and judicious empiricism, founded on extensive clinical observation. If he is drawn into error by the seductions of theory, he is sure to be reclaimed by the appeals of experience. But the therapeutical improvements of Sydenham are limited to the more common acute diseases. There are many morbid affections, of the nature and seat of which he had not the slightest knowledge; and, for the removal of which, modes of practice are required, that empiricism could never reveal. In the treatment of such cases, he, in common with his contemporaries and immediate successors, resorted to whatever means accident might suggest as probably suited to their relief and cure.

Much of the practice of physicians, in 1733, is of this description; and, in some instances, to a degree that is singularly fanciful and ridiculous. The truth of this remark is shown in their *materia medica* and *officinal* preparations. Not content with combining a few medicines that modify the action of one another, and thus more effectually fulfil certain indications of cure, they mingle together a multitude of articles, many of which are altogether inert, or so feeble in quality and inconsiderable in quantity, as to render them trivial in a pharmaceutical com-

pound. The most celebrated instances of this kind are the Mithridatium, or Confectio Damocratis, and the Theriaca Andromachi; the former consisting of forty-five, and the latter of upwards of sixty ingredients. The original formula of these compounds is said to have been found in the cabinet of Mithridates, king of Pontus. It was afterwards reformed by Andromachus, physician to Nero. The Theriaca was held in the highest estimation as a preservative against every species of venom; and, in an age of superstition, when dread of assassination by poison prevailed, it was frequently resorted to, especially by those who moved in the higher circles of society. Though not regarded as possessing the antidotal power ascribed to it at a former period, it is employed by the physicians of the eighteenth century as serviceable in the cure of many diseases.

But more striking illustrations of the therapeutical notions of the day are presented in the catalogue and classification of medicinal agents. Thus, among the *detergents*, are enumerated snails, vipers, white dog's dung, earth-worms, and fox-lungs. Among *absorbents*, are rubies, emeralds, and goat's blood. Among *diurectics*, are hog's lice and hog's dung. Among *diaphoretics*, are unicorn's horn, and bone of a stag's heart. Among the *hysteric remedies*, are elk's hoof, dung of the goose and peacock, and man's skull. Among *ripeners* and *drawers*, are fat of a dog and fat of a man. Among *repellents*, are a dead man's hand, and the royal touch. Numerous other examples might be cited, equally remarkable and disgusting.*

* Huxham, who had risen to eminence in 1733, and whose works possess the practical character and general merit of those of Sydenham, strongly inveighs against the polypharmacy of his contemporaries. "When a physician," he says, "knows whether stimulants or anodynes, relaxants or astringents, attenuants or incassants, are indicated, he can be at no great loss how to serve himself of proper drugs out of the vast *materia medica* which we at present abound with. He should select a few of the most effectual for his use, of each sort, and stick to them, and not run into the immense *farrago* which some are so fond of. By so doing, he will soon be acquainted with their virtues and effects, and readily distinguish between the symptoms of the disease, and those caused by the medicines; which is a thing many times of no small importance. I have seen in private practice, and some public writings, such a jumble of things thrown together in one prescription, that it would have puzzled *Apollo* himself to know what it was designed for; not but that there are frequently such complications (and contra-indications too sometimes) in diseases, as makes some degree of combination and contrast in a medicine necessary."—*Essay on Fevers, &c.—Preface.*

But to the credit of the physicians of this period it must be said, that they have no faith in the catholicons which the alchymists professed to have discovered, by which life could be extended beyond its natural limits. Of these life-preserving expedients, the most remarkable was the Tincture of Artephius, consisting of human spirits, extracted from a healthy young man, which taken in small doses, from time to time, would protract life beyond a thousand years. Boerhaave, in speaking of this tincture, but without any faith in its alleged power, says, nevertheless, that "it is certain that the strength of a healthy body may, in some measure, be communicated to one that is weak or diseased, since girls lying with old women waste away, whereas the old women improve and have better health and spirits."

Such is a circumspective review of the state of the world, and particularly of medicine, in 1733. And now, bearing in mind what has been noticed, let us return to our own time. And here, how wonderful is the change! In whatever direction we turn, the scene presents a new aspect; its limits are extended; with a few exceptions, ancient structures have disappeared, or been rebuilt from their foundations, enlarged, and embellished; objects, new, and in great variety, attract from every quarter; and, though impenetrable obscurities bound the view, every thing is disposed in a light that renders the contrast striking and impressive. In accomplishing these changes the human mind, during the last one hundred years, has been in constant and vigorous action. In some countries governments have been overthrown, and civil institutions reformed; in others, the ties of allegiance have been sundered, and free and independent states erected. Inquirers after truth have ceased to venerate speculative authorities, and broken down the idols of the schools. Besides transforming the political condition of nations, and producing numerous discoveries in science, and inventions in art, the revolution of a century has created new objects of ambition, and given new impulses to human enterprise. The particulars, in a survey so extensive, are too numerous to be adverted to at this time. In noticing some of them, we shall select such as are most interesting.

In no branch of knowledge have the changes been more im-

portant and radical than in that of medicine. What now remains of the phlogistic doctrine of Stahl, and his psychological pathology, or of the hypothesis of Hoffmann, and the splendid system of Boerhaave? Resting on, comparatively, a small number of acknowledged facts, their theories now appear like fictions of the imagination founded on a few realities. The age, however, in which their doctrines were received, will ever be regarded with interest. It was the point of time at which speculative medicine reached its height, and began to decline, and at which inductive inquiry commenced a course of rigorous observation, and careful inference.

The chemistry of the present time bears few of the characters of that of 1733. Instead of the confusion of phenomena, and mystical postulates of that day, we have now analyses, generalizations, and formulæ, that give to every part of the science an exactness almost mathematical. Moreover, in description and detail, ambiguity is avoided and precision obtained, by a nomenclature at once beautiful and expressive. Modern chemistry might not unaptly be said to have had its origin at the epoch on which our attention has been turned, since in 1733 was born one of its earliest and most successful cultivators, namely, Dr. Priestley. To the discoveries of this eminent man, and to those of Scheele, Lavoisier, Cavendish, Black, Rutherford, Davy, Berzelius, Dalton, Vauquelin, Bertholet, Gay Lussac, Magendie, Pelletier, and a few others, the science is indebted for the materials that, at present, form its substantial ground-work. Through the powerful agency of the electrical principle, first recognised by Franklin, and brought under control by him, Galvani and Volta, many of the more refractory compounds have yielded up their elements, and disclosed their hitherto recondite properties and relations.

In the departments of anatomy and physiology also, the improvements are numerous and important. Besides perfecting the descriptive anatomy of Cheselden, Winslow, Heister, and their contemporaries, the human structure has been demonstrated in several new points of view. The *anatomy of relation*, or topographical anatomy, forms now an essential part of a surgical education. It exhibits the organs and tissues of the body as they are connected and relatively disposed to one another,

in particular regions of the body. Though at every period in the history of operative surgery some attention must have been given to this mode of studying the human frame, it is chiefly within the last one hundred years, and particularly of late, that it has received the impress of a distinct department of anatomy. Among those to whom surgical anatomy owes its elevation, are found the distinguished names of Desault, Boyer, Roux, Colles, Burns, Hey, Gimbernat, Scarpa, Cooper, and Velpeau.

Another mode, equally modern, of examining the structure of the human body is that known by the title of *General Anatomy*. Under this head, all the elementary textures of the system are investigated and generalized; those being arranged together which are similar in organization and analogous in function. Thus collected and classified, their common characters are examined, and their specific peculiarities, arising from their diversity of situation and connection, particularly determined. This division of anatomy, in its application to physiology and pathology, is of the first importance. It leads to the study of the uses of every tissue of the body separately, and consequently of the part each tissue performs, when acting with others, in producing the various functions of organic life. It displays, too, the structures which are the immediate seats of disease, and exhibits the barriers which, in certain affections, limit the extension of morbid action. The advantages of this mode of unravelling the human body are experienced in every inquiry concerning the nature of diseases. The origin of general anatomy cannot, perhaps, be dated earlier than the time of Bordeu, whose researches on the cellular tissue, were published in 1767. Subsequently, the inquiries of Dr. Carmichael Smyth contributed to draw attention to the subject. But is it to Bichat the world has decreed perpetual honour for his lucid exposition of the organization, properties, analogies, and relations of the various elementary tissues that make up the body. Led to the study of the organic textures by the striking distinctions, pointed out by Pinel, between the mucous and serous membranes, his happy genius accomplished a work that, in its results, established a new era in the history of medicine. Whatever modifications general anatomy has since received from the labours of Meckel, Gordon, Mascagni, Meyer, Beclard, and others, and how considerable

soever, the changes it may hereafter undergo, it must ever retain the characteristic features given it by the creative hand of Bichat.

But there is yet another branch of anatomy which at present holds a high rank among liberal studies, and of which neither Cheselden nor his contemporaries of 1733, had scarcely any correct knowledge, namely, philosophical anatomy; a department which elucidates the laws that governs the formation of the organs, the causes and varieties of abnormal structure, the operations of moral and physical influences on the human constitution, and the comparative organism of man and the inferior animals.

But though the modern improvements in anatomy are many and important, they are less so than those in physiology. Here, indeed, almost every thing is new. Of the physiological systems of 1733, scarce a vestige remains. It was said, by the celebrated Dr. William Hunter, who died in 1783, that "there never was a man more followed and admired than Dr. Boerhaave. I remember the veneration in which he was held. And now, in the space of forty years his physiology is — it shocks me to think in what a light it appears." The physiological discoveries since the time of Dr. Hunter, far exceed, in number and value, those which had been made within the period he mentions; and consequently, the Boerhaavian system is, at present, deeply overlaid by accumulated truth. The improvements in physiology are too numerous to be even noticed on this occasion. We can but allude to those relating to the functions of the digestive and respiratory organs, and the vascular and nervous systems.

Corresponding with the advances in physiology, are those in pathology. Instead of the hypothesis that diseases are, originally, certain alterations in the condition of the fluids, we have now the doctrine that they are, for the most part, primarily certain affections of the solids. The principles of pathology, therefore, have undergone a fundamental change. We have said that the age of Stahl, Hoffmann, and Boerhaave, will always be regarded with interest. It will be so, for the reason, that a limit was then put to the long and exclusive reign of the humoral pathology, and a commencement made in new modelling the frame of medi-

cal philosophy. The first movement in this great revolution, as we have already hinted, was the bold announcements of Baglivi, and certain theoretical opinions of Hoffmann. The idea, that diseases originated in the moving fibres, being authoritatively promulgated, especially by the last of these distinguished men, soon attracted general attention ; and, eventually, was adopted as a primary fact in pathological science. The downfall of humoralism followed of course, leaving no memorials of its former dominion, but the few solitary truths that had given it a precarious support.

The theory of Stahl, though in a high degree fanciful, obviously favoured, in its leading principle, the revolution in question. By contending that the *anima*, or rational soul, governed the physical movements in health and disease, he drew attention, more particularly than had been done, to the common principle of vitality, the phenomena of which are chiefly manifested in the solids. So far, and without any design on his part, he contributed to the overthrow of the humoral pathology. Hoffmann, too, in supporting his great proposition, that certain diseases primarily consist in a spasm or atony of the moving fibres, evidently had no conception of the turn he was giving to the course of medical inquiries ; for, excepting the principles embraced in that proposition, his doctrines are humoral and mechanical. It is a fact sufficiently singular to be stated, that Boerhaave, whose theoretical system transcended in popularity every other, furnished nothing original promotive of the advancement of medicine, whilst Stahl and Hoffmann wrought up into their hypotheses, elements, which though crude and unshapen, were destined to explode the errors with which they were connected, and become, under improved forms, the basis on which medicine was afterwards to rest.

The transition from humoralism to solidism being thus commenced, was rapidly carried forward by their immediate successors. Among the abler and more distinguished of these, were Haller and Cullen, both of whom in 1733, were just entering the profession, the former being, at that time, twenty-four and the latter twenty-one years of age. Haller was the pupil of Boerhaave ; but abandoned the system of his preceptor, and engaged as early as 1739, in a course of inquiries into the nature and

laws of irritability and sensibility. The result of his inquiries were so original and satisfactory, that the humoral theories lost their attractions, and ceased, in a measure, to exert their former authority. At the same time Cullen, being appointed to the chair of medicine in the rising school of Edinburgh, and adopting, with certain alterations and additions, the leading principles of Hoffmann with respect to the spasmodic and atonic affections of the moving fibres, entirely subverted, in a few years, the pathology of the fluids, and established that of the solids. But though solidism is every where received as the true basis of pathology, the medical philosophy of the present day does not exempt the fluids from disease. It regards them as often affected secondarily to the solids, and, perhaps, sometimes primarily. It contemplates the human body as a unit, the organic apparatus elaborating and distributing the fluids, and the fluids influencing and modifying the solids. It views the nervous, vascular, and secretory organs as the parts in which the vital principle is primarily and especially operative in preserving health; and hence it refers the origin of disease to functional derangements occurring in those parts.

Now, if to these changes in chemistry, anatomy, physiology, and the general doctrines of pathology, be added the immense stores of facts accumulated, within a few years, from *post mortem* examinations, demonstrative of the precise seat and anatomical characters of disease, the present state of medicine will appear in forcible contrast with that a century ago. Comparatively, every thing is now settled upon a permanent physiological basis. The history, symptomatology, etiology, and diagnosis of most disorders are, in a high degree, full and precise; and their treatment, aided, in many instances, by new and powerful agents, greatly improved. Moreover, in the progress of medical discovery, many specific diseases have been disarmed of their terrors, while others, for the most part, are banished, or limited in their prevalence.

Surgery has detached itself from its former degraded association, and by many and signal achievements, raised itself to the rank of medicine. The medical character among the well educated, no longer imposes by a grave demeanour, aristocratic habiliments, and show of learning; but is cheerful, frank, un-

distinguishable in attire from the rest of the world, and intelligible in communication.

There are now no Stahls, or Hoffmanns, or Boerhaaves, whose doctrines give character to the age. No hypothetical systems, deserving of notice, that divide physicians into parties, and challenge their adhesion and support. Medical fame is distributed among a multitude scattered in every enlightened country. Such are the divisions of medical pursuits, that eminence founded on merit, is widely equalized, through the attainment by many to the same degree of excellence in the different departments of study and practice. In no individual are found combined the qualities that distinguish the cultivators of the several branches of medicine. If a few, here and there, rise above others, by reason of superior industry or superior talent, their greater elevation is so inconsiderable as to be scarcely discerned above the line that forms the high but extended level of professional eminence.

Medical knowledge is too widely diffused to allow any medical school, however able its faculty, to exert a controlling influence over the medical world. Compared with its state a century ago, medicine is now a republic; and such it must remain, so long as the *a posteriori* method of research is pursued with zeal, as it has been of late, in various countries. Everywhere practical studies have taken the place of theoretical speculations; instruction is sought in hospitals, dispensaries, almshouses, lazarettos, prisons, and the private chambers of the sick; pestilence is fearlessly encountered, and its phenomena and ravages calmly observed: the dead of all diseases, are carefully and minutely dissected; and though the field of inquiry is yet boundless and inviting, the three kingdoms of nature have been widely explored, their productions analyzed, and many of them applied to the great ends of all medical science, the prevention and cure of diseases, and the physical happiness of mankind. Finally, the knowledge derived from these sources in different countries, is carefully gathered up, and periodically circulated by the press; and thus a regular interchange of medical intelligence is established throughout the earth.

